

WATER-RELATED INCIDENTS IN MARICOPA COUNTY, 2005

A Report to the Drowning Prevention Coalition of Central Arizona



**Arizona Department of Health Services
Bureau of Public Health Statistics**

September 22, 2006

**Epidemiology Report
Number 2006: 1**



Janet Napolitano, Governor
State of Arizona

Susan Gerard, Director
Arizona Department of Health Services

contact person:

Timothy J. Flood, M.D.
Arizona Department of Health Services
Bureau of Public Health Statistics
150 N 18th Avenue, Rm 550
Phoenix, Arizona 85007-3248
(602) 542-7333

This report is prepared in support of the activities of the Drowning Prevention Coalition of Central Arizona

Suggested citation: Flood TJ. *Water-related incidents in Maricopa County, AZ, 2005*. Arizona Department of Health Services, Bureau of Public Health Statistics. Phoenix, AZ. Report #2006:1. September 2006.

This report can be made available in alternative format. Please contact the office listed above or call 1-800-367-8939 (TDD).

For electronic version see <http://www.azdhs.gov/phs/phstats/meddir/>

Permission to quote from or reproduce materials from this publication is granted. Acknowledgment is appreciated.

WATER-RELATED INCIDENTS IN MARICOPA COUNTY, 2005

SUMMARY

This report describes water-related incidents that have activated the 9-1-1 emergency system. Data in this report are derived mainly from case reports submitted by firefighters and fire departments in the Phoenix metropolitan area. In 2005 there were 106 serious water-related incidents that occurred in the metro area among persons of all ages. Children 0-4 years of age accounted for 63 of these incidents, 49 of which occurred in swimming pools. Of the 63 young children, 15 are known to have died (12 due to incidents occurring in pools). Of the remaining children, most survived the incident without apparent medical complications. Although there has been a 62% increase in the number of young children who live in the county since 1990, the count of incidents in swimming pools has remained fairly constant since 1990.

We believe that prevention efforts have suppressed the number of incidents over the past sixteen years. Similarly, the Maricopa drowning death rate for children 0-4 years of age in 2005 fell to 5.3 deaths per 100,000 children, the second lowest rate since we started tracking the problem.

An absent or inadequate barrier (as opposed to lack of supervision) is the most commonly attributed cause of incidents in which the child dies. In contrast, a lapse of direct supervision is more prevalent in incidents in which the child has a presumed normal outcome. Emphasis on issues relating to supervision will have the greatest impact on nonfatal incidents, especially in the summertime. **However, to prevent child drowning deaths (in contrast to incidents in which the child survives intact) greater attention needs to be paid to the placement of barriers and their maintenance.**

TABLE OF CONTENTS

INTRODUCTION.....	4
METHODS AND DATA SOURCE	4
FINDINGS	6
YOUNG CHILDREN.....	8
Outcomes	17
Attributed Cause.....	18
Comparison To Child Fatality Review Data	18
LIMITATIONS OF INCIDENCE DATA.....	21
DEATH CERTIFICATE DATA	22
DISCUSSION.....	23
APPENDIX	24

INTRODUCTION

In the mid-1980's the drowning death rate of Arizona's preschoolers ranked first in the nation.¹ Warm weather, long summers, and the presence of more than 300,000 residential swimming pools make Arizona prone to water-related incidents.

Furthermore, death is just one outcome of water-related incidents: in about 9% of incidents the child survives, albeit with some degree of neurological impairment.²

To address the problem of water-related incidents in the Phoenix metropolitan area (called "Maricopa County" in this report), the Drowning Prevention Coalition of Central Arizona was formed in 1988. This Coalition is comprised of municipal fire departments, hospitals, the state and county health departments, community organizations, pool builders, suppliers of pool safety equipment, parents of drowning victims, and others.

The following report presents the data collected for 2005, and compares the findings to those in previous years. Much of the report focuses on children under five years of age, specifically on incidents occurring in swimming pools.

METHODS AND DATA SOURCE

Case Definition: In this report a water-related incident is defined as an incident in which a fire department responded to a 9-1-1 emergency call. We include in the analysis any incident in which the victim was given CPR, was not breathing, and was submerged or not struggling when retrieved from the water. (Some of these cases die the same day or at a later time; some fully recover.) We exclude from analysis any incident that did not appear to be life-threatening; for example, we exclude from analysis an incident in which a victim was struggling and did not require CPR.³

¹ Arizona Department of Health Services. Unintentional Drowning Deaths, Arizona, 1980-1989. Office of Planning & Health Status Monitoring, October 1990.

² Beyda, D. and Masuello, J. Phoenix Children's Hospital. Oral communication, July 1999.

³ These relatively minor 9-1-1 incidents that were excluded sometimes are called "dunkings, close calls, or near misses." In 1999 there were 31 such cases, in 2000 there were 22, in 2001 there were 54, in 2002 there were 27, in 2003 there were 33, in 2004 there were 31, and in 2005 we excluded 48 cases from further analysis. ADHS requests that fire departments submit all such incidents, but we exclude them from further analysis in the yearly reports. Obviously trivial incidents that would not even qualify as "dunkings" are not submitted by most fire departments.

Procedures: Since 1988, the Arizona Department of Health Services (ADHS) has monitored water-related incidents as reported by local fire departments. The fire departments usually are first on the scene of 9-1-1 calls and are able to provide information about the event. We assume that very few serious incidents occur without activation of 9-1-1. The fire departments submit incident reports on a standard form (see Appendix) developed in conjunction with the Coalition. The reported data items include the age and gender of the victim, the location of the incident, and the apparent circumstances surrounding the event. The ADHS Bureau of Public Health Statistics receives and analyzes these case forms.

So far, the data has not consistently included the calls to the Maricopa County Sheriff's Office, which responds to incidents on the surrounding lakes, or the nearby Salt or Verde Rivers. These are popular recreational areas located just outside of the Phoenix metropolitan area.

For consistency, one person (S.B.) at ADHS receives and codes the forms of each reported incident. A second person (T.J.F.) reviews the data entries of each record. Usually, fewer than six incidents per year are questionable as to whether the incident was life-threatening. Calls to 9-1-1 that are canceled are not submitted to ADHS. The surveillance system relies upon fire departments to report all the cases occurring within their jurisdictions.

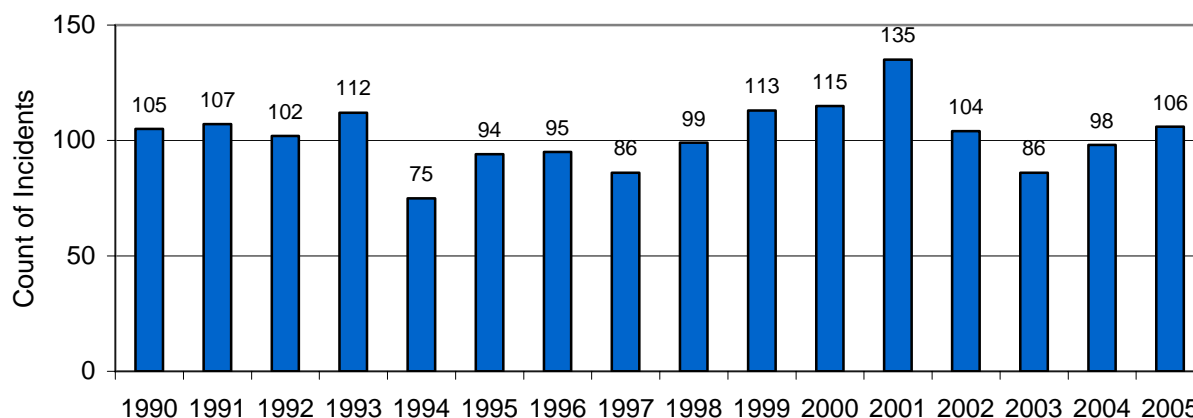
Validation: We search the local newspaper (Arizona Republic) daily for reports of water-related incidents. When found, articles are clipped and attached to the fire department reports. Rarely, there is no associated fire department report. If a report is missing, then ADHS contacts the fire department to request a submission. If the fire departments do not submit a case report, then we use the information from the newspaper clipping to create a case report.

Analysis: Analysis of data is performed using Microsoft Access on the database of the 2,356 records entered since 1988. The minor (non life-threatening) incidents, also called "dunkings", are excluded from all subsequent analyses reported herein.

FINDINGS

In 2005, fire departments and the newspaper reported 106 serious water-related incidents in Maricopa County among persons of all ages. Eight incidents in 2005 were reported only in the newspaper. The count of incidents in 2005 was similar to the annual counts reported since 1990 (see **Figure A**).

Figure A. Count of serious water-related incidents among persons of all ages in all bodies of water. An incident may lead to an outcome of "death" or survival with "no impairment."



The distribution of the 106 incidents in 2005 according to the city and age of the victim is shown in **Table 1**.

Table 1. Water-related incidents in 2005 according to age group and city of incident in Maricopa County. Only life threatening incidents are included in the analysis.

City of Incident	Years of Age of the Victim						_Total
	0-4	5-14	15-34	35-64	65+	Unknown	
Avondale			1				1
Chandler	5	2			1		8
Gilbert	6				1		7
Glendale	3						3
Mesa	8	2	2		1		13
Other & Unk		1	1		1	1	4
Peoria	1				1		2
Phoenix	36	8	5	5	3	6	63
Rural area							
Maricopa Co	1						1
Scottsdale	3						3
Tempe		1					1
All Areas	63	14	9	5	8	7	106

The body of water of the incidents according to age group is presented in **Table 2**. Most incidents took place in pools. Pools, either above ground or in ground, were involved in 78 (73.6%) of the 106 events. Forty-nine of the 78 incidents in pools involved children aged 0-4 years. Bathtubs (12 incidents), and rivers and lakes (5 incidents) were the next most common places for water-related incidents among all ages. Two incidents occurred in spas. Eight preschoolers were trapped in bathtubs in 2005.

Table 2. Water type by age group, 2005. Only life threatening incidents are included in the analysis.

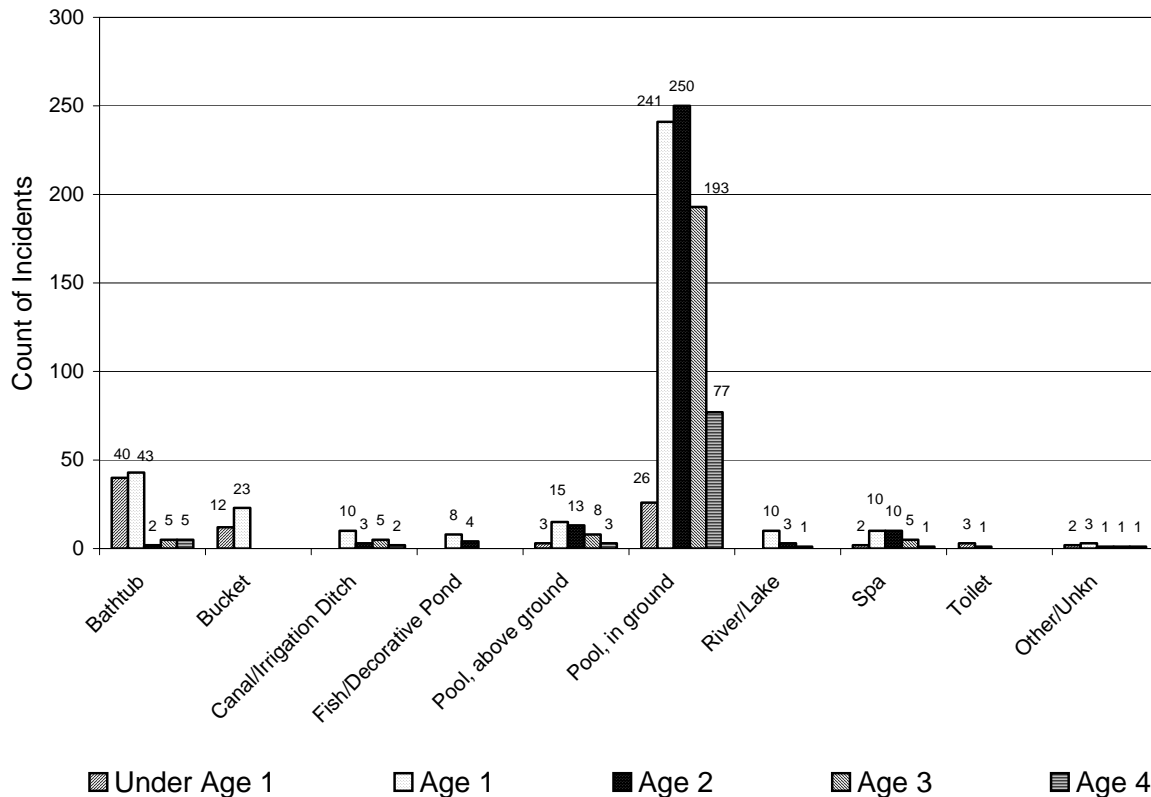
Water type	Years of Age of the Victim						Total
	0-4	5-14	15-34	35-64	65+	UNK	
Bathtub	8		2	1	1		12
Bucket	1						1
Canal/Irrigation Ditch						1	1
Fish/Decorative Pond	1						1
Other	1						1
Pool, in ground	48	13	6	4	5	1	77
Pool, above ground	1						1
River/Lake	2	1	1		1		5
Spa	1				1		2
Toilet							
Unknown						5	5
All water bodies	63	14	9	5	8		106

Young Children

Children, ages 0-4 years, comprised the largest group experiencing a water-related incident. Although older individuals are equally important to consider in terms of loss of life, society generally feels a greater sense of responsibility to prevent injury to persons in the youngest, highly vulnerable, age group. The remainder of this report analyzes the findings among the 0-4 year old age group.

The distribution of cases among single ages of the 0-4 year old group is shown in **Figure 1**. Among children 1-4 years old, the count of incidents in swimming pools far overshadows the count in all other bodies of water combined. Among infants under one year of age, bathtubs are the most common water body in which incidents occur.

Figure 1. Count of incidents according to the body of water in which life threatening incidents occurred, by single age category, reported in Maricopa County, 1990-2005.



The following tables and figures provide information about incidents occurring in swimming pools for this age group. **Figure 2** shows the count of pool-related incidents reported over the previous 18 years. In 2005, the count (49) increased over the previous two years. Because of the increasing number of children residing in the metro area (from 170,182 in 1990 to 284,966 in 2005 – a 62% increase) we have calculated in **Figure 3** the rate of pool incidents, expressed per 100,000 children who reside in Maricopa County. The rate of 17.2 is the third lowest rate on record. The inverse of this rate for 2005 ($100,000 / 17.2$) reveals that for every 5,813 children, one child experienced a life-threatening pool incident in Maricopa county.

Figure 2. Count of life-threatening incidents in pools, by year, among 0-4 year olds.

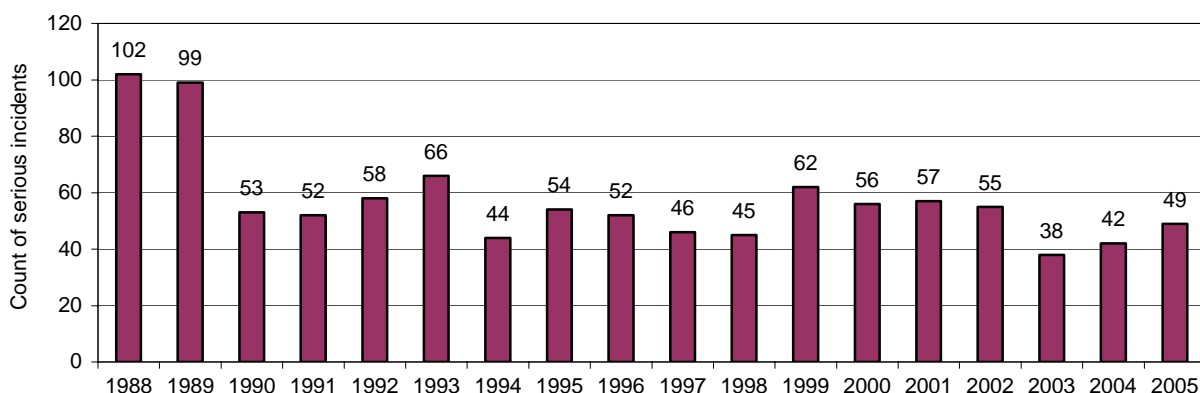


Figure 3. Rate (per 100,000 children aged 0-4) of life threatening pool incidents occurring in Maricopa County. The rates consider the increasing population of children in the county. The numerators for the rates are the counts of incidents (shown above) without regard to the county in which the child resided.

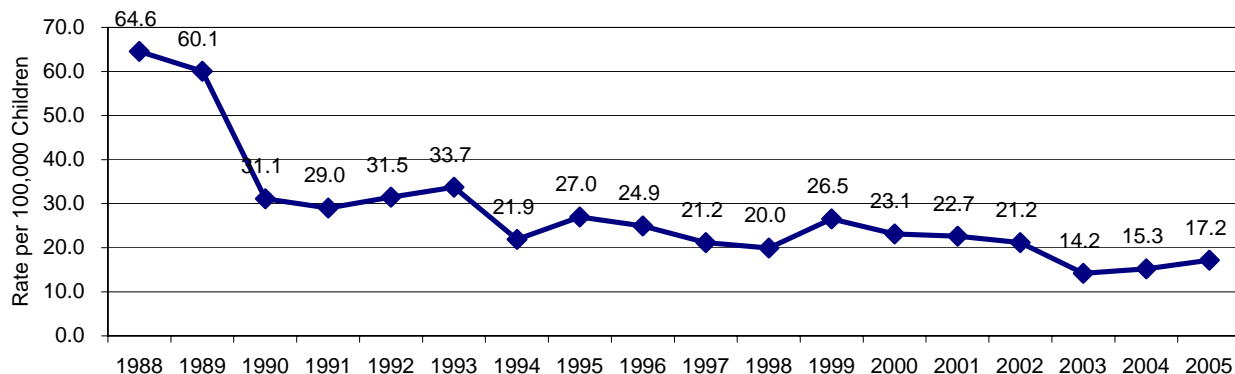
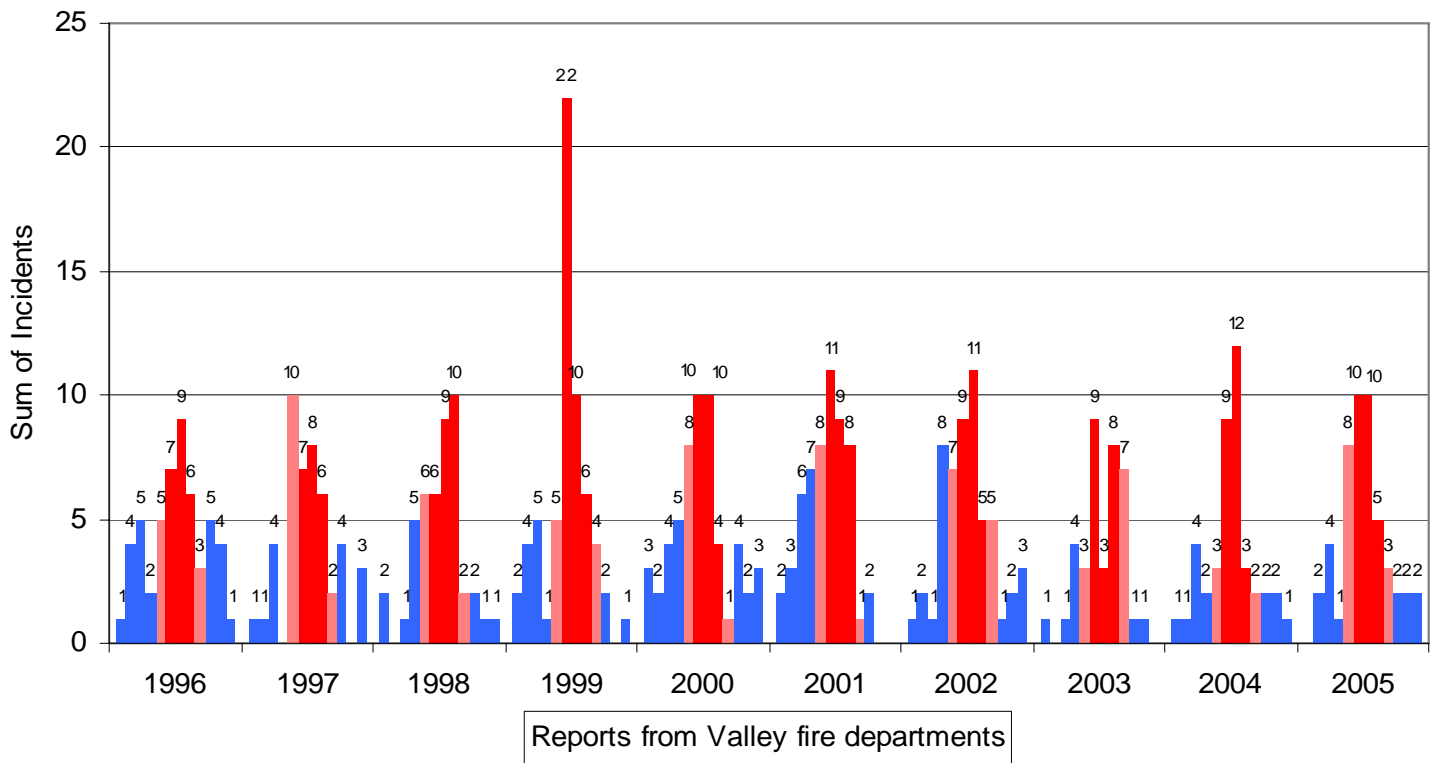


Figure 4 displays the occurrence of cases by month. The dramatic spike in incidents that occurred in June of 1999 has not been repeated. Rather, we note the typical pattern seen in previous years, with the number of pool-related incidents peaking during the summer months of June, July, and August. In 2005 the counts in June and July exceeded our short-term goal of fewer than 10 incidents every month.

Figure 4. Monthly sum of life-threatening swimming pool incidents, 0-4 year olds, Maricopa County.



As shown in **Table 3**, the majority of the young, pool-related victims in 2005 were male (51%). This was a notably lower proportion than the values in 2000, 2001, 2002, 2003, and 2004 of 67%, 61%, 56%, 63%, and 62% males in this 0-4 year old group.

Table 3. Gender of 42 children, 0-4 years old, involved in pool-related incidents, 2005.

Gender	Number	(%)
Male	25	51%
Female	24	49%

Race and ethnicity are difficult variables to analyze because of the way that Hispanic ethnicity is often misreported as a race group. This pattern is similar to the reporting practices in previous years. For analysis here, we count Whites, unless the report from the firefighter specified otherwise, as non Hispanic. For purposes of analysis we count “Hispanic” by disregarding the race field. A tabulation of the available data is presented in **Table 4**.

The 2000 Census found that 40.1% of children age 0-4 residing in Maricopa County were Hispanic.⁴ Furthermore, starting in 2003 the number of births to Hispanic mothers has exceeded that of Whites. The proportion of Hispanic families that actually have pools is not known, but is probably less than the population as a whole.

Table 4. Race and ethnic characteristics of children, 0-4 years of age, involved in water-related incidents in pools in 2005.

Race/Ethnicity	Count	%
Asian	2	4.1%
Amer Indian	0	0.0%
Black	3	6.1%
Hispanic	15	30.6%
White, non Hispanic	24	49.0%
Other	1	2.0%
Unknown	4	8.2%
TOTAL	49	100.0%

⁴ To calculate the percentage of Hispanic children in Maricopa County, the numerator was derived from the U.S. Census Bureau at <http://factfinder.census.gov/> and the denominator was derived from the Arizona Department of Economic Security’s Population Statistics at <http://www.de.state.az.us/>

Table 5 presents the incidents according to the body of water and the site of the 63 incidents involving children between the ages of 0 and 4. The most common site of incidence was a pool located at the victim's home (37 incidents). Five incidents occurred at a relative's pool. Three incidents each occurred in the pool at a friend's home or neighbor's home. The six bathtub incidents occurred at the victim's home. Two incidents occurred in a river or lake. Only one incident occurred in a bucket, and no incidents occurred in canals or toilets in 2005 among 0-4 year olds in Maricopa County.

Table 5. The body of water according to the site of incident for children, 0-4 years of age. Life-threatening incidents only, Maricopa County, 2005.

Body of Water	Friend's Home	Neighbor's Home	Public/ Semi-pub	Relative's Home	Victim's Home	Other / Unknown	All Sites
Bathtub					6	2	8
Bucket					1		1
Canal/Irrigation Ditch							0
Fish/Decorative Pond					1		1
Pool, above ground					1		1
Pool, in ground	3	3		5	36	1	48
River/Lake						2	2
Spa					1		1
Toilet							0
Other/Unknown						1	1
TOTAL	3	3		5	46	6	63

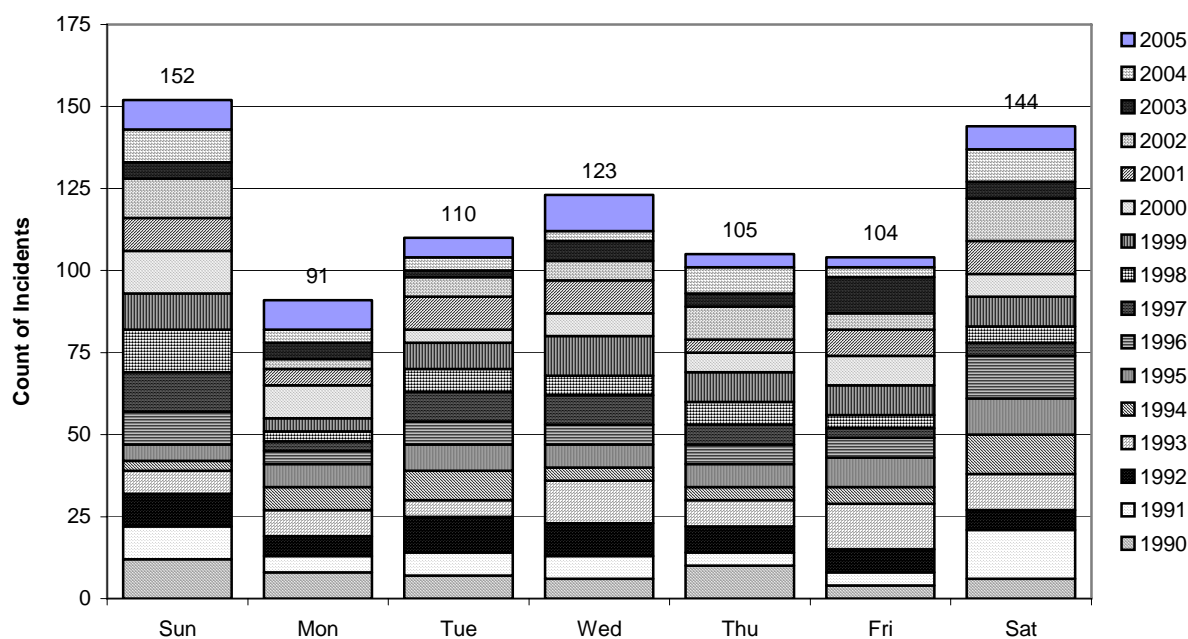
Table 6 presents the type of dwelling where the incidents took place. Thirty-four (69%) of the 49 pool incidents occurred at a single family home. Twelve (24%) of the 49 pool incidents occurred in apartments or condominiums in 2005. In past years, apartments were the location of most bathtub incidents. In 2005, two apartments and four single homes had life-threatening bathtub incidents involving 0-4 year old children.

Table 6. The body of water according to the type of dwelling for children, 0-4 years of age, who experienced a water-related incident in 2005

Body of Water	Apt/ Condo	Hotel/ Motel	Single Home	Multiple Units	Trailer/ Mobile	Unk./ Other/NA	Total
Bathtub	2		4			2	8
Bucket	1						1
Canal/Irrigation Ditch							0
Fish/Decorative Pond			1				1
Pool, above ground			1				1
Pool, in ground	12	1	33			2	48
River/Lake						2	2
Spa	1						1
Toilet							0
Other/Unknown						1	1
Total	16	1	39	0	0	7	63

Figure 5 displays the occurrence of pool-related incidents by day of week. The most common day of occurrence varies from year to year. Incidents occurred on every day of the week. There was no day when vigilance would not have been important. The graph shows that pool incidents tend to occur more often during the weekend.

Figure 5. Day of the week of life-threatening pool incidents among children 0-4 years old, Maricopa County, 1990-2005



The distribution of pool incidents by hour of the day is shown in **Figure 6**. Not surprisingly, the incidents occurred when children were likely to be awake. The peak time for an incident in the 0-4 year old age group was in the mid to late afternoon.

Figure 6. Life threatening pool-related incidents by hour of the day among children 0-4 years of age. Cumulative count, 1990-2005, Maricopa County.

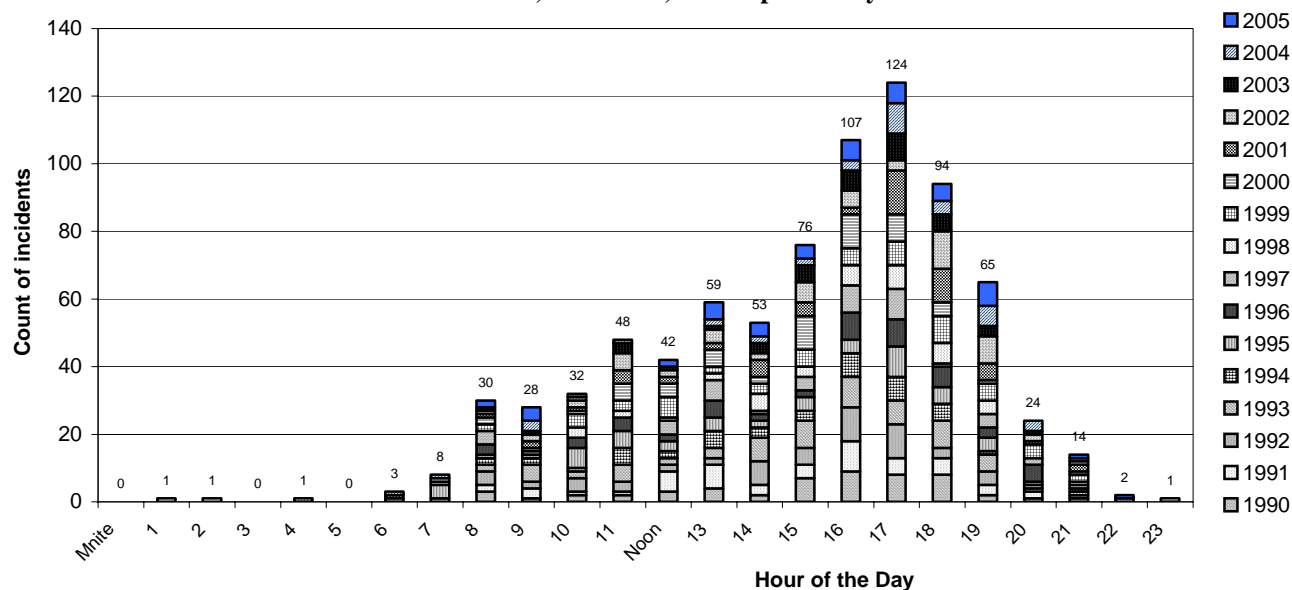


Table 7 presents information about the type of clothing worn at the time of a pool-related incident. In at least 43% of the cases, the children were not wearing swimming attire. These incidents did not occur in a swimming situation; rather, they occurred at a time when the children were not expected to be in or near the pool.

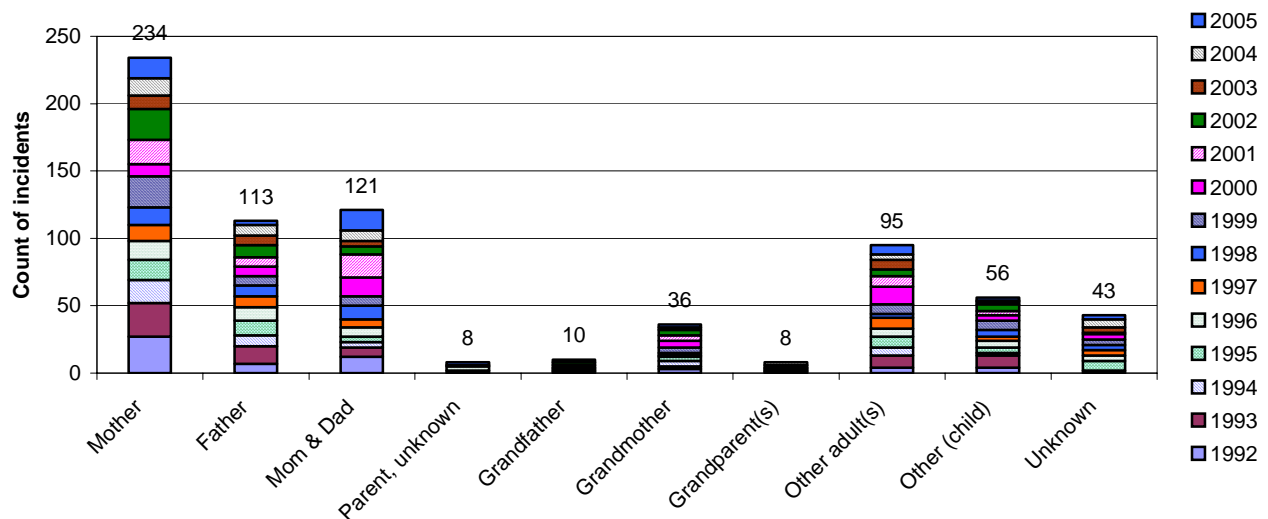
Table 7. Clothing worn by children ages 0-4 who experienced a life threatening water related incident in a pool, 2005

Clothing	Number	%
None	1	2.0%
Swimwear	24	49.0%
Other clothes	21	42.9%
Unknown	3	6.1%
Total	49	100.0%

A major purpose of this surveillance system is the identification of the factors surrounding water-related incidents in young children. To assist in this effort, the personnel from the responding fire departments attempt to determine the apparent circumstances surrounding each event. In gathering this data, a firefighter asks about supervision at the time of the incident and looks for breaches in layers of protection that likely allowed a young child to access the pool.

Information about the supervisor of the victim at the time of incident is shown in **Figure 7**. Over the past 13 years, a mother or father or both was supervising the child in 476 (66%) of the 724 life-threatening incidents involving children 0-4 years old. In 248 (34%) incidents, the supervisor was someone other than the child's parent. This seems to be higher than the amount of time that children in this young age group spend outside the supervision of a parent. Thus, babysitters, grandparents, and other supervisors also need to be even more alert to the potential for a pool-related incident to occur.

Figure 7. Cumulative count of presumed supervisor in life-threatening pool incidents involving children, age 0-4, 1992-2005



Outcomes

The fire departments have learned that at least 15 of the 63 young children (0-4 years old) who experienced a serious water-related incident in 2005 have died (see **Table 8**). Twelve children died from incidents in pools, and two died in bathtubs, and one died in a river or lake. Of the 63 children, 29 had no reported impairment when released from the hospital. There were three documented cases of neurological impairment in this age group in 2005. The outcome status of 16 children was unknown. Since firefighters try to obtain the follow-up status on cases which have not responded to their resuscitative efforts, we speculate that in most cases a follow-up status of “unknown” means that the child probably recovered well. Currently, we are working with legal counsel to document the children’s outcome status from the hospital record.

The narrative section of the incident report form often provides additional information concerning the incident. This narrative section reveals that a family member or other person often resuscitated the child

Table 8. Outcome status of children less than 5 years of age reported as having a life-threatening water related incident in 2005.

Water type	Outcome Status				Total
	Unknown	Died	Impairment	No Impairment	
Bathtub	2	2		4	8
Bucket				1	1
Canal/Irrigation Ditch					
Fish/Decorative Pond				1	1
Other	1				1
Pool, above ground				1	1
Pool, in ground	13	12	3	20	48
River/Lake		1		1	2
Spa				1	1
Total	16	15	3	29	63

at the scene by promptly administering CPR when the child was pulled from the water source. This rapid action appears to be a vital step in stabilizing the child and counteracting the detrimental effects of the submersion. However, we cannot determine whether prompt CPR leads to the survival in a vegetative state of some children who otherwise would have died.

Attributed Cause

Upon review of the incident form, we assign a single, “attributed cause” of each pool incident to one of the following six categories:

- No barrier to pool
- Inadequate fence
- Gate or latch failed or was propped open
- Back safety door or latch failed
- Supervision issue
- Other or unknown.

This information is further classified into events that occurred during the seven “cold” months, October through April, and the five “warm” months, May through September.

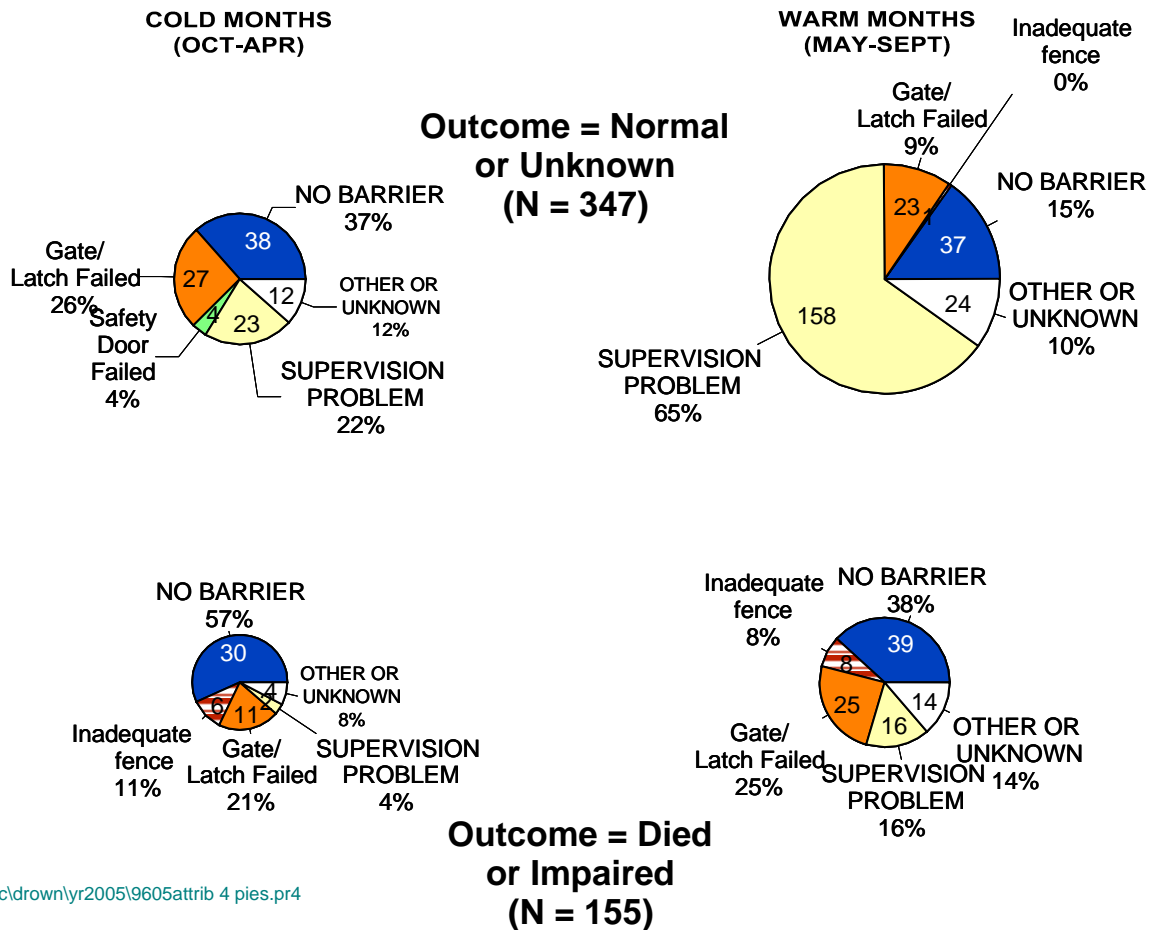
Comparison To Child Fatality Review Data

The Arizona Child Fatality Review Team (CFRT) is a separate program of ADHS that uses different data sources and criteria to evaluate the causes of the deaths of children. The data sources include the death certificate, hospital record, police report, and social service report. The CFRT has published their findings of drowning of young children, 1995-1999, and reported that only 4 of 81 drowning **deaths** of children less than 5 years of age occurred in backyard pools in which it was known that there was an adequate pool fence that had a properly functioning locked gate.⁵

We wondered whether a comparable analysis of our data, looking specifically at the children who died or were impaired, would yield similar findings. To relate the incidence data reported by fire departments to the mortality data from CFRT, we combined the categories of the 155 incidents occurring between 1996 and 2005 where the child’s outcome was “died (142) or impaired (13).” For additional comparison, we also analyzed the combined category of 347 incidents where the outcome was “normal (204) or unknown (143).” As in previous reports, we display the findings according to season (warm or cold). The results are shown in the four pie charts of **Figure 8**.

⁵ Rimza ME, Schackner RA, Bowen KA, Marshall W. Can Child Deaths Be Prevented? The Arizona Child Fatality Review Program Experience. Pediatrics. 2002; 110(1). www.pediatrics.org/cgi/content/full/110/1/e11

Figure 8. Comparison of the single attributed cause of incidents in pools, according to time of year (cold vs warm months) and outcome of the child (normal and unknown vs. died and impaired). This figure analyzes cases occurring in 1996-2005. Data are derived from reports submitted by fire departments in Maricopa County.



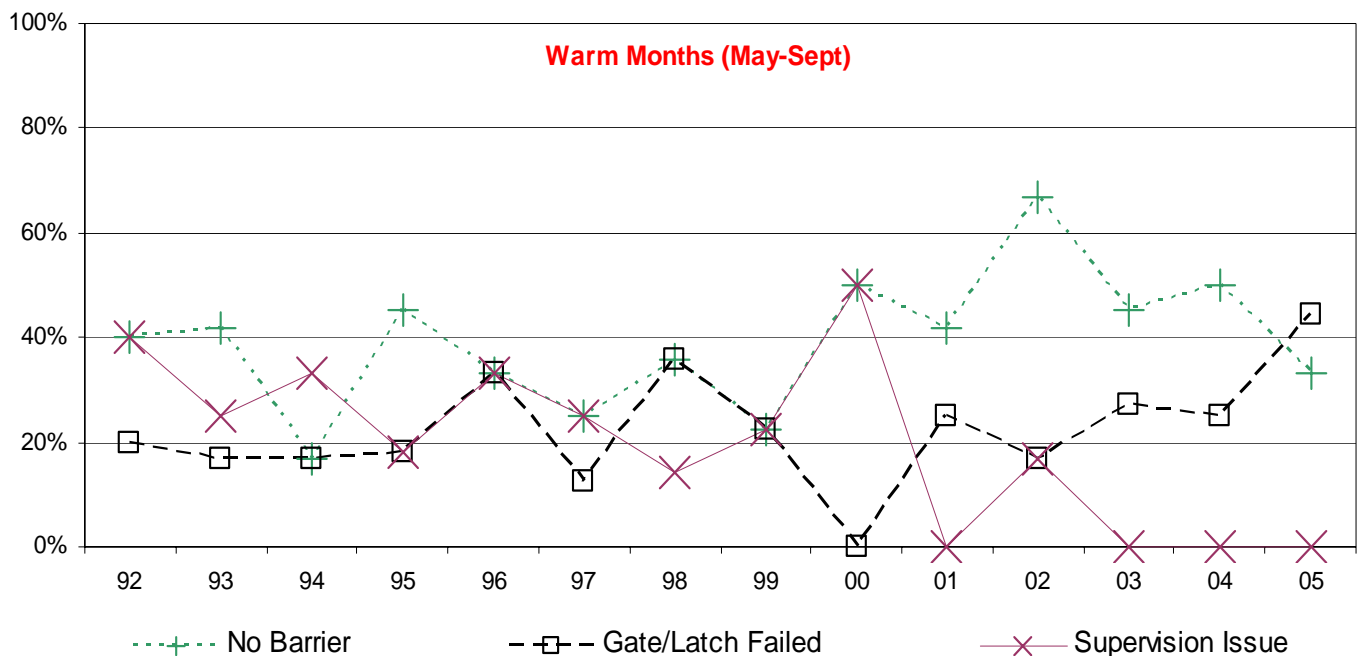
N:\chronic\drown\yr2005\9605attrib 4 pies.pr4

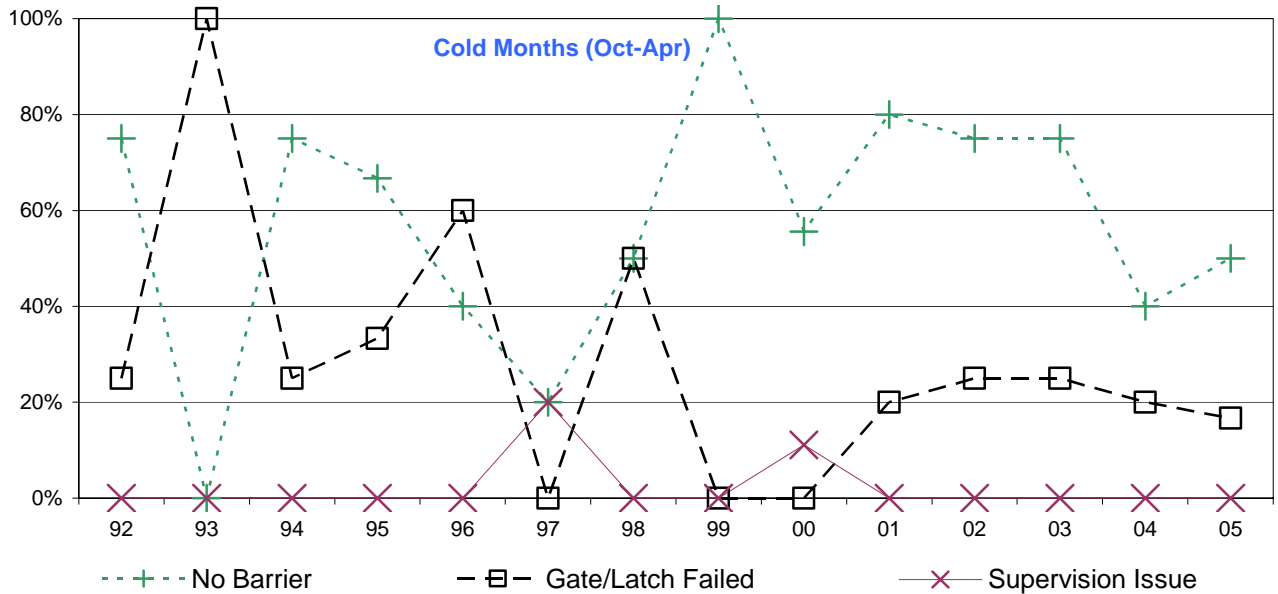
This approach reveals a notable finding for incidents that occurred during the warm months. The roles of supervision and barriers dramatically change depending on the outcome we are considering. The role of barriers (absent or failed) for cases whose outcome is “death or impaired” markedly differs compared to those cases whose outcome is “normal or unknown.” Barriers appear to be a significantly more prominent factor in cases where the child died or was impaired than is supervision. On the other hand, supervision is the predominant factor in warm month incidents in which the child survived with normal or unknown outcome. In cold months, **Figure 8** shows that a barrier is the major factor regardless of outcome. The data here support the findings of

the CFRT regarding the role of inadequate barriers as a major factor that contributes to child drownings in swimming pools.

Figures 9a and **9b** presents data on the trend of the attributed cause of pool-related incidents over the 14 year period. As noted above, the attributable cause is best analyzed by excluding cases in which the outcome is “normal” or “unknown.” A interesting and probably more relevant pattern is noted by analyzing the cases where the child’s outcome is death or impairment. Approximately 10 deaths occurred annually from pool incidents in warm months, and about 5 deaths annually from incidents that occurred in cold months (data not shown). The proportions swing widely from year-to-year because the counts are relatively small. Nevertheless, the charts suggest a decrease in the proportion of cases attributed to supervision in warm months, especially in the most recent 3 years. For events occurring in cold months (see next page) we hesitate to draw conclusions about the time trend because the counts are so small and year-to-year variability so great.

Figures 9a (warm) and 9b (cold). Trend of attributed causes (expressed as the proportion of all cases in the warm or cold season) of pool incidents in Maricopa County involving children 0-4 years of age in which the outcome of the incident was death or impairment. Data within a given season will not add to 100% because we do not display the trend lines for the small proportion of cases of “Inadequate barrier” and “Other/Unknown.”





LIMITATIONS OF INCIDENT DATA

Our surveillance system relies upon voluntary reporting and is subject to underreporting if the fire departments reduce their participation in submitting the report forms. We have begun discussions with fire departments about revising the content of the report form and creating an electronic input system.

Our assumption that few serious water-related incidents occur without the activation of the 9-1-1 system has not been rigorously tested. In a future reporting period we intend to compare our findings to the counts of cases seen at hospital emergency departments. Cases that tend to lack a fire department report include those that are obviously dead when the medical responders arrive on scene, crime scene cases, and cases under the jurisdiction of the sheriff's office or a tribal government. Information from death certificates reveal that two deaths of children 0-4 years of age in 2005 (in a canal and a pool) were not included in the reports from fire departments.

DEATH CERTIFICATE DATA

Using death certificates as an independent data source, **Figure 10** shows the drowning death rate for children under five years of age.⁶ The decline in the death rate looks generally similar to the decline in the rate of pool incidents reported by the fire departments shown previously in **Figure 3**.

An advantage of presenting this graph is that drowning deaths of Maricopa County residents that occur in another county are not included here. Furthermore, in death certificate data, the outcome (i.e., death) is known. Conversely, in the incident reports submitted by the fire departments, the final outcome of the incident is sometimes unknown. However, there are some limitations of using this death certificate “county of death” data to describe the drowning rate: deaths in a given year may reflect a few near-drowning incidents that occurred in a previous year; the rates presented here consider events that occurred in any body of water (pool, bucket, bathtub, lake, etc.), not just pools; the data reflect the county of occurrence of the death, not of the county of the incident (for example, if a child is transported to Maricopa county for care).

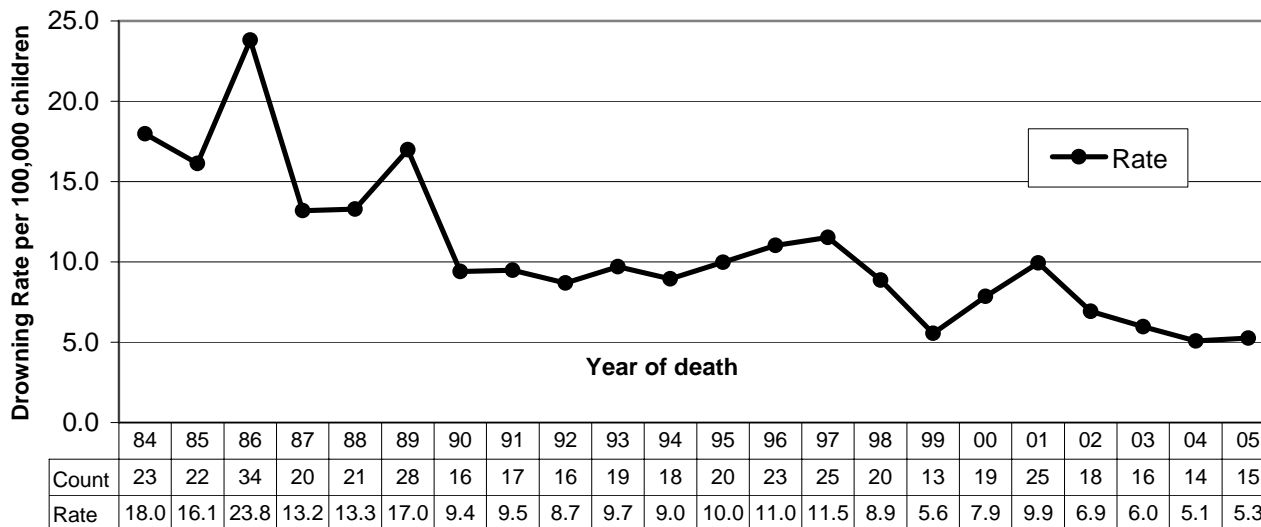
In 2005, the Maricopa drowning rate decreased to 5.3 deaths per 100,000 children. This is the second lowest drowning rate since we began tracking the rates. For comparison, the goal of *Healthy Arizona 2010* is to reduce drowning fatalities to 0.9 deaths per 100,000 young children.^{7,8}

⁶ To calculate this rate, the numerator includes non-residents and Arizona residents, age 0-4 years old, whose death occurred in Maricopa County. The denominator, however, is the Maricopa County population of children 0-4 years old. We chose this unconventional method for calculating the rate because we occasionally encounter nonresident visitors whose incident and death occurred in Maricopa county. We count these cases because the Drowning Prevention Coalition is focused on reducing the incidents regardless of whether the child is a county resident or a visitor.

⁷ U.S. Department of Health and Human Services. *Healthy People 2010*, 2nd ed., Volume 2. Injury Prevention, Section 15-29: Reduce Drownings, page 15-40. U.S. Government Printing Office, November 2000.

⁸ <http://www.azdhs.gov/bems/trauma-pdf/injuryprevplan.pdf> ADHS Injury Surveillance and Prevention Plan, 2002-2005.

Figure 10. Drowning death rate for children, 0-4 years of age, where the occurrence of the death is in Maricopa County. The incident leading to death could have occurred in any body of water. [Data Source: ADHS, Vital Statistics, death certificates coded with underlying cause of death as E830, E832, or E910 (prior to year 2000), or W65-W74, V90-V92, or Y21 (year 2000 and later)].



DISCUSSION

A partial solution to control pool drowning is the placement of barriers around pools. This report finds that most incidents occur at home, in the family pool. Arizona law (A.R.S. § 36-1681) requires that all homes with a child under six years of age and that have a pool, must have a barrier between the house and the pool. This law applies to pools built after June 1, 1991. However, local jurisdictions can pass laws that preempt this State law. The State law specifies that fences, motorized safety pool covers, or self-latching doors leading to the pool may be used as a barrier. The law specifies these barriers in term of height, openings, and gate latches capable of preventing entry by small children. Barriers would appear to be most effective in reducing incidents occurring in cold months, but also might reduce incidents, and especially deaths, occurring in warm months.

This report's analysis of attributable cause of pool incidents according to outcome substantially agrees with the findings of the Arizona Child Fatality Review

Program – barriers appear to play a crucial role in preventing most drowning deaths in pools.

The effectiveness of many drowning prevention measures remains speculative. For example, debate continues regarding the age at which swim lessons can prevent childhood drowning. Recently, the county judicial system has prosecuted parents in a few instances when there was evidence of gross neglect. These cases received wide media coverage. Other educational efforts, such as mass media campaigns, have not been evaluated for their impact. Likewise, the role of advice from pediatricians, family members, and friends is a potentially untapped source of intervention education. Knowledge of how best to utilize these strategic interventions could help our community to prevent drowning.

APPENDIX

(See next page – Drowning or Near-Drowning Incident Report Form)

**REPORT OF DROWNING OR
NEAR-DROWNING IN ARIZONA -- 2005**

DATE OF INCIDENT
(MM/DD/YR)

HOUR
(24:00)

AGE
(yrs)

SEX

INCIDENT #

PLAT # or ZIPCODE:

Fire Dept.

(Reporting agency)

CITY OF INCIDENT:

- ☐ Chandler ☐ Mesa ☐ Rural area
☐ Gilbert ☐ Peoria ☐ Scottsdale
☐ Glendale ☐ Phoenix ☐ Tempe
☐ Other: _____

HISPANIC: ☐ Yes ☐ No ☐ Unk.

RACE: ☐ White ☐ Amer. Indian
☐ Black ☐ Unknown
☐ Other: _____

WATER TYPE:

- ☐ Pool--in ground ☐ Spa
☐ Pool--above ground ☐ Bathtub
☐ Canal or Irrig. Ditch ☐ Toilet
☐ Other: _____

SITE OF INCIDENT: (at whose home?)

- ☐ Victim's Home ☐ Neighbor's "
☐ Relative's " ☐ Friend's "
☐ Other: _____

TYPE OF DWELLING:

- ☐ Single Home ☐ Apt/Condo
☐ Hotel/Motel ☐ Other: _____

ATTIRE OF VICTIM: ☐ Swimwear
☐ None ☐ Other Clothes

**ACTIVITY AND LOCATION OF VICTIM
IMMEDIATELY PRIOR TO INCIDENT:**

SUPERVISOR(s) AT TIME OF INCIDENT:

- ☐ Mother ☐ Father ☐ N/A
☐ Other (Specify) _____
Age of this person _____

**ACTIVITY AND LOCATION OF SUPERVISOR
IMMEDIATELY PRIOR TO INCIDENT:**

STATUS OF VICTIM WHEN FOUND IN WATER:

- ☐ Submerged ☐ Floating
☐ Struggling ☐ Unknown
☐ Other: _____

**RESPIRATORY EFFORT WHEN PULLED
FROM WATER:**

- ☐ Present ☐ Absent

ESTIM. DURATION OF ANOXIA: _____

**DID RESCUER/ BYSTANDER(S) PERFORM
CPR?**

- ☐ Yes ☐ No ☐ Unknown

Done right? Comment: _____

**LENGTH OF RESIDENCE AT THIS HOUSE (if
applicable)?** _____

IS THERE A FENCE OR BARRIER?

- ☐ Yes ☐ No ☐ Unknown

Describe: _____

METHOD OF ACCESS TO POOL OR SPA:

- ☐ Supervisor allowed child into pool or deck area
☐ No barrier -- child wandered in
☐ Climbed (specify): _____
☐ Child entered unsecured gate
☐ Child entered secured gate
☐ Other: _____

**WOULD AN INNER FENCE AROUND THE POOL
HAVE PREVENTED THIS INCIDENT?**

- ☐ Yes ☐ No
☐ Unknown ☐ N/A

DISPOSITION:

- ☐ DOA ☐ Died in E.R.
☐ Treated As Outpatient
☐ Admit to: _____

FOLLOW-UP: (Date pt was last seen)

- ☐ Died _____ / _____ / _____
☐ No Impairment _____ / _____ / _____
☐ Impairment _____ / _____ / _____

DESCRIBE THE APPARENT CIRCUMSTANCES (how/why it happened; how child was found & revived): _____

(Initials) _____

(Today's Date) _____